## CLAIMS

What is claimed is:

1. An audio system for spatially widening a stereophonic sound stage provided by at least two loudspeakers without introducing substantial spectral coloration effects, the system comprising:

a pair of left and right loudspeakers to provide a stereophonic audio output, the left and right loudspeakers being spaced apart from one another;

a left channel audio input for inputting a left channel of an audio signal from an audio source to the left loudspeaker over a first direct signal path;

a right channel audio input for inputting a right channel of an audio signal from the audio source to the right loudspeaker over a second direct signal path;

a first filter stage along the first direct signal path intermediate the left channel audio input and the left loudspeaker for introducing a delay to the left channel of the audio signal before the left channel is output at the left loudspeaker;

a second filter stage along the second direct signal path intermediate the right channel audio input and the right loudspeaker for introducing the delay to the right channel of the audio signal before the right channel is output at the right loudspeaker;

a third filter stage intermediate the left channel audio input and the right loudspeaker along a first indirect signal path for adding a first low frequency cross-talk at frequencies below approximately 2 kHz derived from the left channel audio input to the delayed right channel of the audio signal; and

a fourth filter stage intermediate the right channel audio input and the left loudspeaker along a second indirect signal path for adding a second low frequency cross-talk at frequencies below approximately 2 kHz derived from the right channel audio input to the delayed left channel of the audio signal.

2. The audio system of claim 1, wherein the first and second filter stages are substantially identical, and have a first magnitude response; and wherein the third and fourth filter stages are substantially identical and comprise a first element for introducing a gain whose absolute value is smaller than 1.0, a second element for introducing a second delay that is greater than the first delay, and a filter having a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

3. The audio system of claim 2, wherein the absolute value of the gain of the third and fourth filter stages is between approximately 0.5 and 1.0, and wherein the second delay is between approximately 0 ms and approximately 0.5 ms greater than the first delay at frequencies below approximately 2kHz.

4. The audio system of claim 2, wherein the respective filter in each of the third and fourth filter stages blocks frequencies below approximately 250 Hz.

5. The audio system of claim 1, wherein the delay is a frequency-dependent delay.

6. The audio system of claim 1, wherein the first and second filter stages are substantially identical, and have a first magnitude response; and wherein the third and fourth filter stages are substantially identical, and each comprise a linear phase finite impulse response (FIR) filter having a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

7. The audio system of claim 1, wherein the first and second filter stages are substantially identical, and have a first magnitude response; and wherein the third and fourth filter stages are substantially identical, and each comprise a linear phase interpolated finite impulse response (IFIR) filter having a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

8. The audio system of claim 1, wherein the first and second filter stages are substantially identical, and have a first magnitude response; and wherein the third and fourth filter stages are substantially identical and each further comprises a second element for introducing a second delay that may be greater than the first delay, and a cascade of second order infinite

impulse response (IIR) filters, the cascade of filters having a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

9. The audio system of claim 1, wherein the first and second filter stages are substantially identical, and have a first magnitude response; and wherein the third and fourth filter stages are substantially identical and each further comprises a second element for introducing a second delay that is greater than the first delay, and a cascade of infinite impulse response (IIR) filters, finite impulse response (FIR) filters, or a combination thereof, the cascade of filters having a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

10. The audio system of claim 1, wherein the audio system is arranged in a set-top box of a digital television system.

11. The audio system of claim 1, wherein the first, second, third, and fourth filter stages are arranged in a set-top box of a digital television system.

12. The audio system of claim 1, wherein the audio system is arranged in a mobile display appliance.

13. The audio system of claim 1, wherein the first, second, third, and fourth filter stages are arranged in a mobile display appliance.

14. The audio system of claim 1, wherein the audio system is arranged in a consumer electronic product.

15. The audio system of claim 1, wherein the first, second, third, and fourth filter stages are arranged in a consumer electronic product.

16. The audio system of claim 1, wherein the audio system is arranged in a mobile or handheld device, such as a mobile phone, a personal digital assistant, or a game console.

17. The audio system of claim 1, wherein the first, second, third and fourth filter stages are arranged in a mobile or handheld device, such as a mobile phone, a personal digital assistant, or a game console.

18. A method of processing an audio signal for reproduction as stereophonic sound by at least right and left loudspeakers that gives an impression that at least part of the sound emanates from a virtual location spaced apart from the actual location of the loudspeakers without introducing a substantial spectral coloration effect, the method comprising:

inputting an audio signal comprising left and right audio channels to an audio system comprising left and right loudspeakers;

filtering the left audio channel at a first filter stage intermediate a left audio channel input and the left loudspeaker along a first direct signal path between the left audio channel input and the left loudspeaker to delay the left audio channel;

filtering the right audio channel at a second filter stage intermediate a right audio channel input and the right loudspeaker along a second direct signal path between the right audio channel input and the right loudspeaker to delay the right audio channel;

filtering the left audio channel at a third filter stage intermediate the left channel audio input and the right loudspeaker to add a first low frequency cross-talk at frequencies below approximately 2kHz derived from the left channel audio input to the delayed right channel of the audio signal; and

filtering the right audio channel at a fourth filter stage intermediate the right channel audio input and the left loudspeaker to add a second low frequency cross-talk at frequencies below approximately 2kHz derived from the right channel audio input to the delayed left channel of the audio signal.

19. The method of claim 18, further comprising:

reproducing the delayed right audio channel added to the first low frequency cross-talk at the right loudspeaker; and

reproducing the delayed left audio channel added to the second low frequency cross-talk at the left loudspeaker.

20. The method of claim 18, wherein the filtering of the first and second filter stages is performed without introducing any change in a first magnitude response of the left and right audio channels, and wherein the filtering at the third and fourth filter stage delays the first and second low frequency cross-talk with a second delay that is larger than the first delay, introduces a gain whose absolute value is smaller than 1.0, and introduces a second magnitude response that is not greater than the first magnitude response at a frequency below approximately 2kHz and that is substantially zero at and above approximately 2kHz.

21. The method of claim 20, wherein the absolute value of the gain of the third and fourth filter stages is between approximately 0.5 and 1.0, and wherein the second delay is between approximately 0 ms and approximately 0.5 ms greater than the first delay at frequencies below approximately 2kHz.

22. The method of claim 20, wherein the respective filter in each of the third and fourth filter stages blocks frequencies below approximately 250 Hz.

23. The method of claim 18, wherein the third and fourth filter stages each comprise a linear phase finite impulse response (FIR) filter.

24. The method of claim 18, wherein the third and fourth filter stages each comprise a cascade of finite impulse response (IFIR) filters.

25. The method of claim 18, wherein the third and fourth filter stages each comprise a cascade of second order infinite impulse response (IIR) filters.

26. The method of claim 18, wherein the method of processing the audio signal is performed in a consumer electronic product.